NET-1821VD2N

EVOC 1U C206 中高端网络硬件平台

EVOC 1U C206 Medium/High-End Network Hardware Platform

Version:C01

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Safety Instructions

1. Please read this manual carefully before using the product;
2. Leave the board or card in the antistatic bag until you are ready to use it;
3. Touch a grounded metal object (e.g. for 10 seconds) before removing the board or card from the anti-static bag;
4. Before installing or removing a board, wear the ESD gloves or ESD wrist strap; handle the board by its edges only;
5. Before inserting, removing or re-configuring motherboards or expansion cards, first disconnect the computer and peripherals from their power sources to prevent electric shock to human bodies or damage to the product;
6. Remember to disconnect the AC power cord from the socket before removing the board or moving the PC;
7. For PC products, remember to disconnect the computer and peripherals from the power sources before inserting or removing a board;
8. Before connecting or disconnecting any terminal, peripheral or any device, be sure the system is powered off and all the power sources are disconnected;
9. After turning off the computer, wait at least 30 seconds before turning it back on.

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Chapter 1 Product Introduction

Overview

NET-1821VD2N is a high performance network motherboard adopting Intel® C206 chipset solution, ECC and non-ECC un-buffered DDR3 memory. The product integrates VGA display and four DDR3 memory slots, which support dual-channel DDR3 1066/1333MHz up to 16GB. It also provides various connectors, including: two Intel® 82583V 10/100/1000Mbps LAN ports; four SATA connectors, supporting RAID 0/1/5/10; one CF card and IDE, the IDE supports DOM; four USB2.0 ports; two COM ports, COM1 supports serial port redirection function; one 8-channel digital IO connector and one PS/2 keyboard and mouse connector.

The product provides BPI function, which only supports WDT, GPIO configuration and H/W monitor function.

Mechanical Dimensions, Weight and Environment

- Dimensions: 310mm (L) x 210mm (W) x 26mm (H);
- Net Weight: 0.6 Kg;
- Operating Environment:

  Temperature: -10°C ~ 60°C;

  Humidity: 5% ~ 95% (non-condensing);
- Storage Environment:

  Temperature: -25°C ~ 65°C;

  Humidity: 5% ~ 95% (non-condensing);

Typical Consumption

The typical consumption is based on the following idle status values.

CPU: Intel® Xeon® E3-1225 6M Cache SROOG 3.10GHz LGA 1155 95W;

Memory: DDR3 1066 2GB KINGTIGER hynix H5TQ1G83AFPG7C/dual side/16 memory IC/dual side X1;

Operating System: Windows XP+XP3;

- +5V@ 0.65A; +5%/-3%;
- +3.3V@ 0.89A; +5%/-3%;
- +12V@ 1.65A; +5%/-3%.

Microprocessor

Supports Intel® Socket FCLGA1155 package Sandy Bridge CPUs, such as Xeon E3-1275, Xeon E3-1225, I3-2120 and I5-2500; Ivy Bridge CPUs, such as Xeon E3-1225V2, I5-3550S and I7-3770.

Chipset

Intel® C206

System Memory

Provides four 240Pin DDR3 memory slots, supporting ECC and non-ECC un-buffered and dual channel function. The maximum memory capacity supported by a single memory bank is up to 4GB while that supported by the board is up to 16GB.

Note: 1.5V DDR3 1066/1333 ECC and non-ECC unbuffered memory supported by Intel can be adopted; please use the memory listed as follows:

Unbuffered/Non-ECC Supported DIMM Module Configurations

Type	Memory Capacity	IC Size	Memory Specification	IC Number	Single/Dual Side
A	1GB	1Gb	128MX8	8	Single
	2GB	2Gb	128MX16	8	Dual

B	2GB	1Gb	128MX8	16	Dual
	4GB	2Gb	256MX8	16	Dual
	8GB	4Gb	512MX8	16	Dual
C	512MB	1Gb	64MX16	4	Single
	1GB	2Gb	128MX16	4	Single

Unbuffered/ECC Supported DIMM Module Configurations

Type	Memory Capacity	IC Size	Memory Specification	IC Number	Single/Dual Side
D	1GB	1Gb	128MX8	9	Single
	2GB	2Gb	256MX8	9	Single
E	2GB	1Gb	128MX8	18	Dual
	4GB	2Gb	256MX8	18	Dual
	8GB	4Gb	512MX8	18	Dual

Display Function

- Supports CRT display and hot-swap function;
- The maximum resolution and refresh frequency is 2048x1536@75Hz.

Network Function

Provides two 10/100/1000Mbps LAN ports, LAN1 supports Wake-on-LAN function;

Power Feature

Adopts ATX power, supporting ACPI power management function;

Expansion Bus

Provides one 32-bit PCI slot, PCI2.2 standard compliant (only supports 5V PCI device);

Provides four PCIEx8 slots, PCIE2.0 standard and PCIe1.1 standard compliant. PCIE1, PCIE2 and PCIE3 are PCIE dual x4 standard slots while PCIE4 is a standard PCIEx8 slot..

Note: when connecting peripheral devices with the PCI or PCIE slots, please disconnect the AC power first.

Watchdog Function

- 255 levels, programmable by minute or second;
- Supports watchdog timeout interrupt or reset system.

Operating System

- Supported OSs: Windows XP and Linux,WIN 7;
- Unsupported OSs: Windows 2000.

On-board I/O

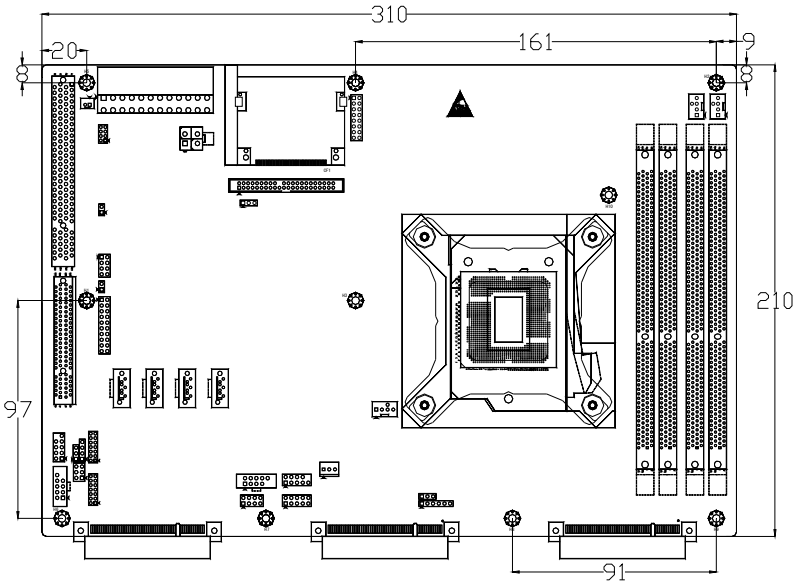
- Two serial ports, COM1 supports serial port redirection function;
- One IDE connector;
- One CF card connector;
- Provides one SATA3.0 connector and three SATA2.0 connectors: SATA1 supports SATA3.0 and complies with SATA2.0; SATA2, SATA3 and SATA4 support SATA2.0 and hot swap function;
- Four USB2.0 ports;
- One PS/2 keyboard/mouse connector;
- One 8-channel digital I/O connector.

Tips: how to identify the alarms

1. Long “beep” indicates system memory error;
2. Short “beep” indicates to power on the computer.

Chapter 2 Installation

Product Outline

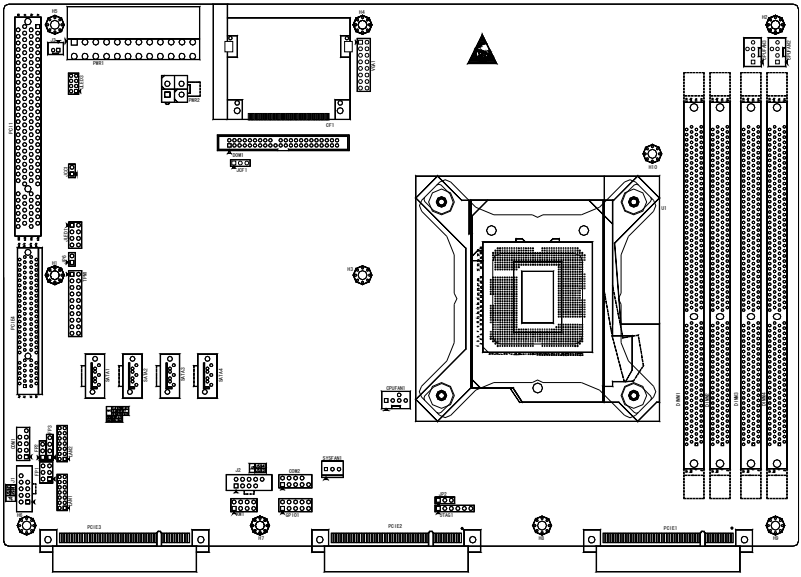


Unit: mm

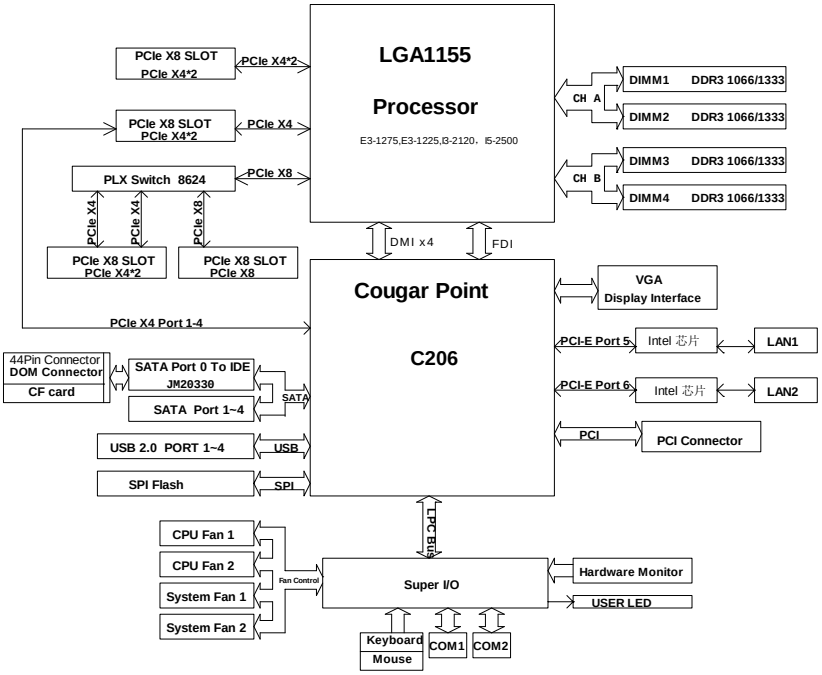
Warning!

Please adopt appropriate screws and proper installation methods (including board allocation, CPU and heat sink installation, etc); otherwise, the board may be damaged. It is recommended to use GB-9074.4-88/ M3*6 combo screws with gasket at H1 ~ H10.

Locations of Connectors



Structure



Tip: How to identify the first pin of the jumpers and connectors

1. Observe the letter beside the socket: the first pin is usually marked with “1” or bold lines or triangular symbols;
2. Observe the solder pad on the back; the square pad is the first pin.

Jumper Setting

1. JCC1: Clear/Keep CMOS Setting (Pitch: 2.54 mm)

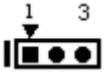
CMOS is powered by the button battery on board. Clearing CMOS will restore original settings (factory default). The steps are listed as follows: (1) Turn off the computer and unplug the power cable; (2) Instantly short circuit JCC1; (3) Turn on the computer; (4) Follow the prompt on screen to enter BIOS setup when booting the computer, reload the optimized defaults; (5) Save and exit. Please set as follows:

JCC1

Setup	Function
1-2 Open	Normal ((Default)
1-2 Short	Clear the contents of CMOS and all BIOS settings will restore to factory default values.

2. JCF1: Choose CF Card Operating Voltage (Pitch: 2.54mm)

Different CF cards have different operating voltages; the board provides two voltage options, 3.3V and 5V. Only when the selected CF card voltage is in accord with the CF card operating voltage in use, can the CF card display normally. Please set as follows:



JCF1

Setup	Function
1-2 Short	+3.3V
2-3 Short	+5V (Default)

3. JP2: Choose Bypass Status (Pitch: 2.54mm)

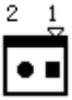
JP2

Setup	Function
1-2 Short	Support Bypass function (Default)
2-3 Short	Bypass function is disabled and restore to normal status.

Note: JP2 can only be set when AC power is connected.

Hardware BYPASS Control Switch Connector

The board provides one 1x2pin hardware BYPASS control switch connector, J3 (Pitch: 2.0mm); the pin definitions are as follows:



J3

Setup	Function
1-2 Open	Normal (Default)
1-2 Short	Hardware forces BYPASS status; software is invalid

Note: J3 can only be set when AC power is connected.

Automatic Power-on Connector

The board provides one 1x2pin automatic power-on connector, JP6 (Pitch: 2.54mm).

JP6

Setup	Function
1-2 Open	Automatic power-on function is unsupported
1-2 Short	Automatic power-on function is supported (Default)

JTAG Connector

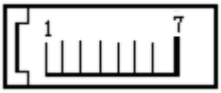
The board provides one 1x6pin JTAG connector (Pitch: 2.54mm), which is the FPGA burning connector on-board. The pin definitions are as follows:

JTAG1

Pin	Signal Name
1	VCC
2	GND
3	TCK
4	TD0
5	TDI
6	TMS

SATA Connector

The board provides four SATA connectors; the pin definitions are as follows:



SATA1 ~ SATA4

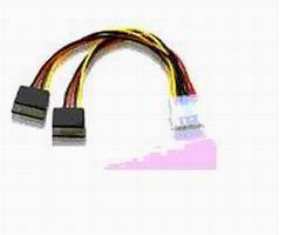
Pin	Signal Name
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

Hot-swap of SATA Hard Disk

Notes for hot-swap of SATA hard disk:

1. The hard disk shall support SATA 2.0 and use 15-pin SATA hard disk power connector.
2. The driver of chipset shall support the hot-swap of SATA hard disk.
3. Hot-swap of SATA hard disk with the operating system is forbidden when system is powered-on.

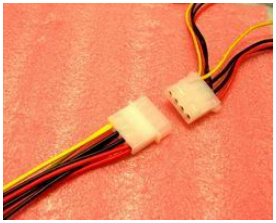
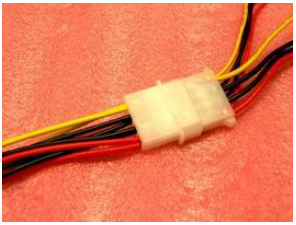
SATA Data Cable



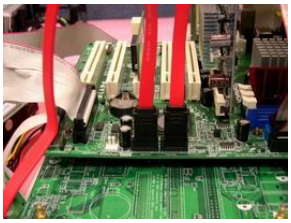
SATA Power Cable

Please carry out hot plugging as follows. Improper operation may destroy the hard disk or result in data loss.

Hot Plug

Step 1: Please plug the 1 x 4 pin SATA power connector (white) into the power adapter.



Step 2: Please connect the SATA data cable to the SATA connector on board.

Step 3: Please connect the 15-pin SATA power connector (black) to the SATA hard disk.

Step 4: Please connect the SATA data cable to the SATA hard disk.

Hot Unplug

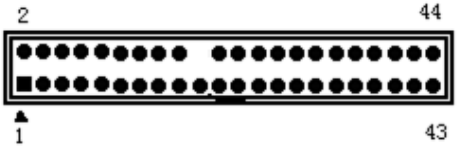
Step 1: Uninstall the hard disk from the device manager.

Step 2: Unplug the data cable from the SATA hard disk.

Step 3: Unplug the SATA 15-pin power connector (black) from the SATA hard disk.

IDE Connector

The board provides one 2x22pin IDE connector (Pitch: 2.0mm); the pin definitions are as follows:



DOM1

Pin	Signal Name	Pin	Signal Name
1	RESET#	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13

15	D1	16	D14
17	D0	18	D15
19	GND	20	KEY
21	DREQ	22	GND
23	IOW#	24	GND
25	IOR#	26	GND
27	IORDY	28	GND
29	DACK#	30	GND
31	IRQ	32	NC
33	DA1	34	ATA66_DET
35	DA0	36	DA2
37	CS1#	38	CS3#
39	LED#	40	GND
41	+5V	42	+5V
43	GND	44	GND

Note: the IDE connector can only be used as DOM disk connector.

CF Connector

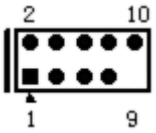
The board provides one 50Pin TYPE-II CF card connector (CF1); the pin definitions are as follows:

Pin	Signal Name	Pin	Signal Name
1	GND	26	CD1#
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15

7	CS0#	32	CS1#
8	GND	33	VS1#
9	ATASEL#	34	IOR#
10	GND	35	IOW#
11	GND	36	WE#
12	GND	37	IRQ
13	VCC	38	VCC
14	GND	39	CSEL#
15	GND	40	VS2#
16	GND	41	RESET#
17	GND	42	IORDY
18	A2	43	DREQ
19	A1	44	DACK#
20	A0	45	DASP#
21	D0	46	ATA66_DET
22	D1	47	D8
23	D2	48	D9
24	WP/IOCS16#	49	D10
25	CD2#	50	GND

USB Port

The board provides two-group 2x5pin headers (Pitch: 2.54mm); the pin definitions are as follows:

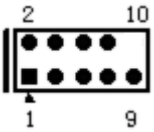


J1 (USB1/USB2)
J2 (USB3/USB4)

Pin	Signal Name	Pin	Signal Name
1	+5V	2	+5V
3	USB1_Data-	4	USB2_Data-
5	USB1_Data+	6	USB2_Data+
7	GND	8	GND
9	NA	10	GND

Serial Port

The board provides two 2x5Pin serial port slots (Pitch: 2.54mm), supporting RS-232 mode. The pin definitions are as follows:

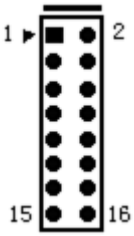


COM1/COM2

Pin	Signal Name
1	DCD#
2	RXD
3	TXD
4	DTR#
5	GND
6	DSR#
7	RTS#
8	CTS#
9	RI#
10	NA

Display Connector

The board provides one 2x8Pin VGA pin header (Pitch: 2.54mm); the pin definitions are as follows:

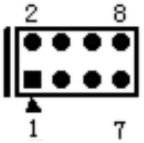


VGA1

Pin	Signal Name	Pin	Signal Name
1	Red	2	GND
3	NC	4	Green
5	GND	6	DDCDATA
7	Blue	8	GND
9	HSYNC	10	NC
11	NC	12	VSYNC
13	GND	14	GND
15	DDCCLK	16	shield_gnd

Keyboard/Mouse Connector

The board provides one 2x4Pin keyboard and mouse pin header (Pitch: 2.54mm); the pin definitions are as follows:

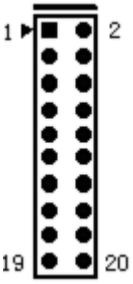


KM1

Pin	Signal Name	Pin	Signal Name
1	KB_DATA	2	MS_DATA
3	KB_CLK	4	MS_CLK
5	GND	6	GND
7	+5V	8	+5V

TPM Connector

The board provides one 2x10Pin TPM pin header (Pitch: 2.54mm); the pin definitions are as follows:

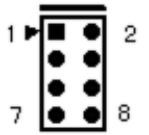


TPM1

Pin	Signal Name	Pin	Signal Name
1	Clock_33M	2	GND
3	LPC_FRAME-	4	NC
5	PLT_RST	6	VCC5
7	LPC_AD3	8	LPC_AD2
9	VCC3_3	10	LPC_AD1
11	LPC_AD0	12	GND
13	SMB_CLK	14	SMB_DATA
15	VCC3_3SB	16	SERIRQ
17	GND	18	GND
19	SUS_STAT-	20	LPC_AD0

User-defined Indicator Connector

The board provides one 2x4Pin user-defined indicator pin header (Pitch: 2.54mm); the pin definitions are as follows:

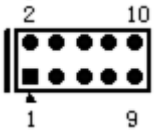


JLED1
(Pitch: 2.54mm)

Pin	Signal Name	Pin	Signal Name
1	+3.3V	2	Output1
3	+3.3V	4	Output2
5	+3.3V	6	Output3
7	+3.3V	8	Output4

GPIO Connector

The board provides one 2x5Pin GPIO connector, 4-channel input and 4-channel output (Pitch: 2.54mm); the pin definitions are as follows:



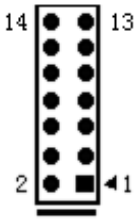
GPIO1

Pin	Signal Name	Pin	Signal Name
1	GPIO1	2	GPIO5
3	GPIO2	4	GPIO6
5	GPIO3	6	GPIO7
7	GPIO4	8	GPIO8
9	GND	10	NC

Note: the pins of GPIO are bi-direction signals; to facilitate test and application, pin 1, 3, 5 and 7 are for input by default while pin 2, 4, 6 and 8 are for output.

LAN Port

The board provides two 2x7Pin 10/100/1000Mbps network pin headers (Pitch: 2.0mm); the pin definitions are as follows:

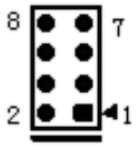


LAN1/LAN2

Pin	Signal Name	Pin	Signal Name
1	MX0+	2	MX0-
3	MX1+	4	MX1-
5	MX2+	6	MX2-
7	MX3+	8	MX3-
9	GND	10	GND
11	LINK_LED+ (SPEED1000-)	12	LINK_LED- (SPEED100-)
13	ACT_LED+	14	ACT_LED-

Network Indicator

The board provides one 2x4Pin network indicator pin header (Pitch: 2.0mm); the pin definitions are as follows:



JLED3

Pin	Signal Name	Pin	Signal Name
1	+3.3V	2	LAN1_ACTIVITY
3	LAN1_LINK100	4	LAN1_LINK1000
5	+3.3V	6	LAN2_ACTIVITY
7	LAN2_LINK100	8	LAN2_LINK1000

PCIe x8 Connector

The board provides three PCIe x8 plate-type connector (PCIE1/PCIE2/PCIE3) and one PCIe x8 (PCIE4) 180-degree connector

The pin definitions for PCIE1 are as follows:

Pin	Signal Name	Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
A1	PRSNT1#	A2	+12V	B1	+12V	B2	+12V
A3	+12V	A4	GND	B3	BYPASS_LED1	B4	GND
A5	NORMAL_LED1	A6	BYPASS_LED2	B5	SMCLK	B6	SMDATA
A7	NORMAL_LED2	A8	TMS	B7	GND	B8	+3.3V
A9	+3.3V	A10	+3.3V	B9	1STN2_PCFG1	B10	3.3Vaux
A11	PWRGD/PERST#	A12	GND	B11	WAKE#	B12	WDT_OUT1_A
A13	REFCLK+	A14	REFCLK-	B13	GND	B14	PETp0
A15	GND	A16	PERp0	B15	PETn0	B16	GND
A17	PERn0	A18	GND	B17	WDT_OUT1_B	B18	GND
A19	SIO_RSMRST-	A20	GND	B19	PETp1	B20	PETn1
A21	PERp1	A22	PERn1	B21	GND	B22	GND
A23	GND	A24	GND	B23	PETp2	B24	PETn2
A25	PERp2	A26	PERn2	B25	GND	B26	GND
A27	GND	A28	GND	B27	PETp3	B28	PETn3
A29	PERp3	A30	PERn3	B29	GND	B30	WDT_OUT2_A
A31	GND	A32	5VSB	B31	WDT_OUT2_B	B32	GND
A33	5VSB	A34	GND	B33	PETp4	B34	PETn4
A35	PERp4	A36	PERn4	B35	GND	B36	GND
A37	GND	A38	GND	B37	PETp5	B38	PETn5

A39	PERp5	A40	PERn5	B39	GND	B40	GND
A41	GND	A42	GND	B41	PETp6	B42	PETn6
A43	PERp6	A44	PERn6	B43	GND	B44	GND
A45	GND	A46	GND	B45	PETp7	B46	PETn7
A47	PERp7	A48	PERn7	B47	GND	B48	PRSNT2#B
A49	GND			B49	GND		

The pin definitions for PCIE2 are as follows:

Pin	Signal Name	Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
A1	PRSNT1#	A2	+12V	B1	+12V	B2	+12V
A3	+12V	A4	GND	B3	BYPASS_LED3	B4	GND
A5	NORMAL_LED3	A6	BYPASS_LED4	B5	SMCLK	B6	SMDATA
A7	NORMAL_LED4	A8	TMS	B7	GND	B8	+3.3V
A9	+3.3V	A10	+3.3V	B9	CFG6	B10	3.3Vaux
A11	PWRGD/PERST#	A12	GND	B11	WAKE#	B12	WDT_OUT3_A
A13	REFCLK+	A14	REFCLK-	B13	GND	B14	PETp0
A15	GND	A16	PERp0	B15	PETn0	B16	GND
A17	PERn0	A18	GND	B17	WDT_OUT3_B	B18	GND
A19	SIO_RSMRST-	A20	GND	B19	PETp1	B20	PETn1
A21	PERp1	A22	PERn1	B21	GND	B22	GND
A23	GND	A24	GND	B23	PETp2	B24	PETn2
A25	PERp2	A26	PERn2	B25	GND	B26	GND
A27	GND	A28	GND	B27	PETp3	B28	PETn3
A29	PERp3	A30	PERn3	B29	GND	B30	WDT_OUT4_A
A31	GND	A32	5VSB	B31	WDT_OUT4_B	B32	GND
A33	5VSB	A34	GND	B33	PETp4	B34	PETn4
A35	PERp4	A36	PERn4	B35	GND	B36	GND
A37	GND	A38	GND	B37	PETp5	B38	PETn5
A39	PERp5	A40	PERn5	B39	GND	B40	GND
A41	GND	A42	GND	B41	PETp6	B42	PETn6
A43	PERp6	A44	PERn6	B43	GND	B44	GND
A45	GND	A46	GND	B45	PETp7	B46	PETn7
A47	PERp7	A48	PERn7	B47	GND	B48	PRSNT2#B
A49	GND			B49	GND		

The pin definitions for PCIE3 are as follows:

Pin	Signal Name	Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
A1	PRSNT1#	A2	+12V	B1	+12V	B2	+12V
A3	+12V	A4	GND	B3	BYPASS_LED5	B4	GND
A5	NORMAL_LED5	A6	BYPASS_LED6	B5	SMCLK	B6	SMDATA
A7	NORMAL_LED6	A8	TMS	B7	GND	B8	+3.3V
A9	+3.3V	A10	+3.3V	B9	TRST#	B10	3.3Vaux
A11	PWRGD/PERST#	A12	GND	B11	WAKE#	B12	WDT_OUT5_A
A13	REFCLK+	A14	REFCLK-	B13	GND	B14	PETp0
A15	GND	A16	PERp0	B15	PETn0	B16	GND
A17	PERn0	A18	GND	B17	WDT_OUT5_B	B18	GND
A19	SIO_RSMRST-	A20	GND	B19	PETp1	B20	PETn1
A21	PERp1	A22	PERn1	B21	GND	B22	GND
A23	GND	A24	GND	B23	PETp2	B24	PETn2
A25	PERp2	A26	PERn2	B25	GND	B26	GND
A27	GND	A28	GND	B27	PETp3	B28	PETn3
A29	PERp3	A30	PERn3	B29	GND	B30	WDT_OUT6_A
A31	GND	A32	5VSB	B31	WDT_OUT6_B	B32	GND
A33	5VSB	A34	GND	B33	PETp4	B34	PETn4
A35	PERp4	A36	PERn4	B35	GND	B36	GND
A37	GND	A38	GND	B37	PETp5	B38	PETn5
A39	PERp5	A40	PERn5	B39	GND	B40	GND
A41	GND	A42	GND	B41	PETp6	B42	PETn6
A43	PERp6	A44	PERn6	B43	GND	B44	GND
A45	GND	A46	GND	B45	PETp7	B46	PETn7
A47	PERp7	A48	PERn7	B47	GND	B48	PRSNT2#B
A49	GND			B49	GND		

The pin definitions for PCIE4 are as follows:

Pin	Signal Name	Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
A1	PRSNT1#	A2	+12V	B1	+12V	B2	+12V
A3	+12V	A4	GND	B3	RSVD	B4	GND
A5	TCK	A6	TDI	B5	SMCLK	B6	SMDATA
A7	TDO	A8	TMS	B7	GND	B8	+3.3V
A9	+3.3V	A10	+3.3V	B9	TRST#	B10	3.3Vaux
A11	PWRGD/PERST#	A12	GND	B11	WAKE#	B12	RSVD
A13	REFCLK+	A14	REFCLK-	B13	GND	B14	PETp0
A15	GND	A16	PERp0	B15	PETn0	B16	GND
A17	PERn0	A18	GND	B17	PRSNT2#	B18	GND
A19	RSVD	A20	GND	B19	PETp1	B20	PETn1
A21	PERp1	A22	PERn1	B21	GND	B22	GND
A23	GND	A24	GND	B23	PETp2	B24	PETn2
A25	PERp2	A26	PERn2	B25	GND	B26	GND
A27	GND	A28	GND	B27	PETp3	B28	PETn3
A29	PERp3	A30	PERn3	B29	GND	B30	RSVD
A31	GND	A32	RSVD	B31	PRSNT2#A	B32	GND
A33	RSVD	A34	GND	B33	PETp4	B34	PETn4
A35	PERp4	A36	PERn4	B35	GND	B36	GND
A37	GND	A38	GND	B37	PETp5	B38	PETn5
A39	PERp5	A40	PERn5	B39	GND	B40	GND
A41	GND	A42	GND	B41	PETp6	B42	PETn6
A43	PERp6	A44	PERn6	B43	GND	B44	GND
A45	GND	A46	GND	B45	PETp7	B46	PETn7
A47	PERp7	A48	PERn7	B47	GND	B48	PRSNT2#B
A49	GND			B49	GND		

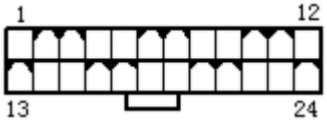
PCI Connector

The board provides one PCI slot (PCI1); the pin definitions are as follows:

Pin	Signal Name	Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
A1	TRST#	A31	PCI_AD18	B1	-12V	B31	+3.3V
A2	+12V	A32	PCI_AD16	B2	TCK	B32	PCI_AD17
A3	TMS	A33	+3.3V	B3	GND	B33	PCI_C/BE#2
A4	TDI	A34	PCI_FRAME#	B4	TDO	B34	GND
A5	+5V	A35	GND	B5	+5V	B35	PCI_IRDY#
A6	INTA#	A36	PCI_TRDY#	B6	+5V	B36	+3.3V
A7	INTC#	A37	GND	B7	INTB#	B37	PCI_DEVSEL#
A8	+5V	A38	PCI_STOP#	B8	INTD#	B38	GND
A9	Null	A39	+3.3V	B9	PRSNT1#	B39	PCI_PLOCK#
A10	+5V	A40	SDONE	B10	Null	B40	PCI_PERR#
A11	Null	A41	SBO#	B11	PRSNT2	B41	+3.3V
A12	GND	A42	GND	B12	GND	B42	PCI_SERR#
A13	GND	A43	PCI_PAR	B13	GND	B43	+3.3V
A14	+3.3Vaux	A44	PCI_AD15	B14	Null	B44	PCI_C/BE#1
A15	PCI_RST#	A45	+3.3V	B15	GND	B45	PCI_AD14
A16	+5V	A46	PCI_AD13	B16	PCI_CLK	B46	GND
A17	PCI_GNT#	A47	PCI_AD11	B17	GND	B47	PCI_AD12
A18	GND	A48	GND	B18	PCI_REQ#	B48	PCI_AD10
A19	PCI_PME#	A49	PCI_AD9	B19	+5V	B49	GND
A20	PCI_AD30	A50	PCI_C/BE#0	B20	PCI_AD31	B50	PCI_AD8
A21	+3.3V	A51	+3.3V	B21	PCI_AD29	B51	PCI_AD7
A22	PCI_AD28	A52	PCI_AD6	B22	GND	B52	+3.3V
A23	PCI_AD26	A53	PCI_AD4	B23	PCI_AD27	B53	PCI_AD5
A24	GND	A54	GND	B24	PCI_AD25	B54	PCI_AD3
A25	PCI_AD24	A55	PCI_AD2	B25	+3.3V	B55	GND
A26	PCI_IDSE	A56	PCI_AD0	B26	PCI_C/BE#3	B56	PCI_AD1
A27	+3.3V	A57	+5V	B27	PCI_AD23	B57	+5V
A28	PCI_AD22	A58	PCI_REQ64#	B28	GND	B58	PCI_ACK64#
A29	PCI_AD20	A59	+5V	B29	PCI_AD21	B59	+5V
A30	GND	A60	+5V	B30	PCI_AD19	B60	+5V

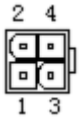
ATX Power Connector

1. The board provides one 2x12Pin ATX power connector, PWR1 (Pitch: 4.2mm); the pin definitions are as follows:



Pin	Signal Name	Pin	Signal Name
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON#
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	PWROK	20	-5V
9	+5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND

2. The board provides one 2x2pin power socket (Pitch: 4.2mm); the pin definitions are as follows:



PWR2

Pin	Signal Name
1	GND
2	GND
3	+12V
4	+12V

ATX Power Switch and HDD Indicator Connector

The board provides one 2x3Pin ATX power switch and hard disk indicator connector (Pitch: 2.54mm); the pin definitions are as follows:

FP1

Pin	Signal Name	Pin	Signal Name
1	PWRBTN#	2	GND
3	GND	4	RESET#
5	HDD_LED-	6	HDD_LED+

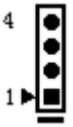
Power Indicator Connector

The board provides one 1x3Pin power indicator connector (Pitch: 2.54mm); the pin definitions are as follows:

FP2

Pin	Signal Name
1	PWR_LED+
2	NC
3	GND

Loudspeaker Output Connector

The board provides one 1x4Pin loudspeaker output connector (Pitch: 2.54mm); the pin definitions are as follows:

FP3

Pin	Signal Name
1	SPEAKER
2	NC
3	GND
4	+5V

Fan Connector

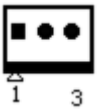
1. The board provides two 1x4 Pin fan connectors (Pitch: 2.54mm); the pin definitions are as follows:

CPUFAN1～CPUFAN3

Pin	Signal Name
1	GND
2	+12V
3	FAN_IO
4	FAN_PWM

Note: FAN_IO: fan speed impulse output; FAN_PWM: fan speed PWM control.

2. The board provides two 1x3Pin fan connectors (Pitch: 2.54mm); the pin definitions are as follows:



SYSFAN1

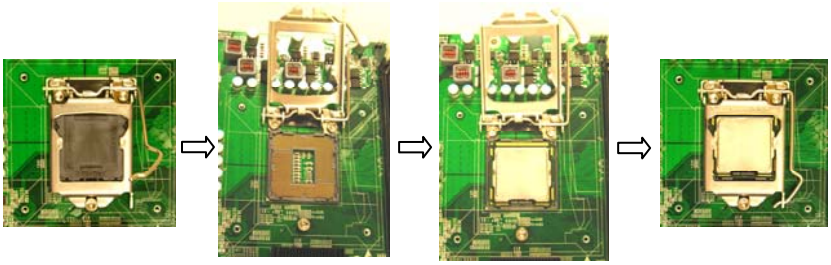
Pin	Signal Name
1	GND
2	+12V
3	FAN_IO

Note: FAN_IO: fan speed impulse output.

Installing the CPU Cooling Fan

Please install the CPU as follows (refer to the figure below):

- Before installing the CPU, please make sure that the power is off, to avoid damaging the CPU.
- Press the rod on the CPU slot and push rightward to make the rod break away from the fixing buckle and then pull the rod upward.
- Lift up the metal cover of the CPU slot and then remove the protective cover of the CPU slot from the inner side of the upper cover by finger.
- Align the concave on the CPU with the heave on the CPU socket and put the CPU into the socket.
- Close the metal cover of the CPU slot, push back the rod of the CPU slot and then lock the fixing buckle.



Note! It is recommended to use cooling fan authenticated by Intel; before installing the fan, smear the heat sink compound on the surface between CPU and the fan cooling fin to improve the heat dissipation performance; always check whether the fan is operating normally to ensure the heat dissipation within the chassis. When holding a board, please hold the edge instead of the cooling fin.

Chapter 3 BIOS Setup

UEFI Overview

UEFI (Unified Extensible Firmware Interface) is the latest computer firmware to replace traditional BIOS. UEFI is solidified in the flash memory on the CPU board. Its main functions include: initialize system hardware, set the operating status of the system components, adjust the operating parameters of the system components, diagnose the functions of the system components and report failures, provide hardware operating and controlling interface for the upper level software system, guide operating system and so on. UEFI provides users with a human-computer interface in menu style to facilitate the configuration of system parameters for users, control power management mode and adjust the resource distribution of system device, etc.

Setting the parameters of the UEFI correctly could enable the system operating stably and reliably; it could also improve the overall performance of the system at the same time. Inadequate even incorrect UEFI parameter setting will decrease the system operating capability and make the system operating unstably even unable to operate normally.

UEFI Parameter Setup

Prompt message for UEFI setting may appear once powering on the system. At that time (invalid at other time), press the key specified in the prompt message (usually <Del> or <F2>) to enter UEFI setting.

All the setup values modified by UEFI (excluding data and time) are saved in the flash storage in system; the contents will not be lost even if powered down or remove the battery of the board. The data and time are saved in CMOS storage, which is powered by battery; unless clearing CMOS is executed, its contents would not be lost even if powered off.

Note! UEFI setting will influence the computer performance directly. Setting parameter improperly will cause damage to the computer; it may even be unable to power on. Please use the internal default value of UEFI to restore the system.

Our company is constantly researching and updating UEFI, its setup interface may be a bit different. The figure below is for reference only; it may be different from your UEFI setting in use.

UEFI Basic Fuction Setup

After starting SETUP program, the main interface of Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc. will appear as below:

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc. opyright (C)	
Main Advanced Chipset Boot Security Save & Exit	
Motherboard Information	Set the Date. Use'Tab' to switch between Date elements.
Project Name NET-1821 Seriess	
BIOS Name Y9131017	
BIOS Version C03	
	→←：Select Screen
Total Memory 2048 MB (DDR3 1333)	↑↓：Select Item
Memory Frequency 1067Mhz	Enter：Select
	+/-：Change Opt
System Date [Thu 10/09/2012]	F1：General Help
System Time [09:41:55]	F2：Previous Values
	F3：Optimized Defaults
Access Level Administrator	F4：Save ESC：Exit
Version 2.15.1227. Copyright (C) 2012,American Megatrends, Inc.	

- **Main**

➢ **System Date**

Choose this option and set the current date by < + > / < - >, which is displayed in format of month/date/year. Reasonable range for each option is: Month (1-12), Date (01-31), Year (Maximum to 2099), Week (Mon. ~ Sun.).

➢ **System Time**

Choose this option and set the current time by < + > / < - >, which is displayed in format of hour/minute/second. Reasonable range for each option is: Hour (00-23), Minute (00-59), Second (00-59).

◆ **Advanced**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Main **Advanced** Chipset Boot Security Save & Exit	
WARNING: Setting wrong values in below sections may cause system to malfunction!	
▶ CPU Configuration ▶ SATA Configuration ▶ USB Configuration ▶ Super IO Configuration ▶ H/W Monitor ▶ Serial Port Console Redirection ▶ CPU PPM Configuration ▶ HDD Latency Time	→←：Select Screen ↑↓：Select Item Enter：Select +/-：Change Opt F1：General Help F2：Previous Values F3：Optimized Defaults F4：Save ESC：Exit
Version 2.15.1227. Copyright (C) 2012,American Megatrends, Inc.	

➢ **CPU Configuration**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
CPU Configuration Genuine Intel® CPU @ 2.20GHz CPU Signature 306a4 Microcode Patch 7 Max CPU Speed 2200 MHz Min CPU Speed 1600 MHz CPU Speed 2200 MHz Processor Cores 4 Intel HT Technology Not Supported Intel VT-x Technology Supported Intel SMX Technology Supported 64-bit Supported L1 Data Cache 32 kB x 4 L1 Code Cache 32 kB x 4 L2 Cache 256 kB x 4 L3 Cache 8192 kB Active Processor Cores [All] Intel Virtualization Technology [Disabled]	→←：Select Screen ↑↓：Select Item Enter：Select +/-：Change Opt F1：General Help F2：Previous Values F3：Optimized Defaults F4：Save ESC：Exit
Version 2.15.1227. Copyright (C) 2012,American Megatrends, Inc.	

Display the relevant information of CPU. Note: the information to be displayed are related to the CPU installed in the platform, and different information will be displayed for different series of CPUs.

- **Active Processor Cores**

  Active CPU core number, only available for multi-core CPU.

- **Intel Virtualization Technology**

  Switch of the Intel virtualization technology.

➢ **SATA Configuration**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
SATA Controller(s) [Enabled] SATA Mode Selection [IDE] IDE Legacy / Native Mode Selection [Native] Serial ATA Port 1 Empty Serial ATA Port 2 Empty Serial ATA Port 3 Empty Serial ATA Port 4 Empty Serial ATA Port 5 Empty Serial ATA Port 6 Empty	→←：Select Screen ↑↓：Select Item Enter：Select +/-：Change Opt F1：General Help F2：Previous Values F3：Optimized Defaults F4：Save ESC：Exit
Version 2.15.1227. Copyright (C) 2012,American Megatrends, Inc.	

- **SATA Controller(s)**

  Switch of SATA Controller(s).

- **SATA Mode Selection**

SATA controller type selection, corresponding to three options: IDE, RAID and AHCI.

Note: when choosing AHCI or RAID Mode to implement system installation, the relevant drivers of the Floppy device and specific chipset are required.

- **IDE Legacy / Native Mode Selection**

Mode selection for IDE controller, corresponding to Native and Legacy.

- **Serial ATA Port 1～ 6**

SATA Port1 ~ 6 dynamically detect whether there are SATA devices on motherboard. If devices are connected with the corresponding ports, then it will display the SATA device type. Otherwise, it will display “Empty”.

➢ **USB Configuration**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
USB Configuration USB Devices: 1 Keyboard，1 Mouse, 2 Hubs Legacy USB Support [Enabled] Mass Storage Devices: Netac [Auto]	→←：Select Screen ↑↓：Select Item Enter：Select +/-：Change Opt F1：General Help F2：Previous Values F3：Optimized Defaults F4：Save ESC：Exit
Version 2.15.1227. Copyright (C) 2012,American Megatrends, Inc.	

- **Legacy USB Support**

  This option is used to support legacy USB devices (keyboard, mouse, storage device, etc). When it is set to Enabled, the USB devices can be used in the OS that does not support USB, such as DOS. When it is set to Disabled, the legacy devices cannot be used in the OS that does not support USB.

  Note: USB can be used in EFI application, such as in Shell.

➢ **Super IO Configuration**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
Super IO Configuration ►Serial Port 1 Configuration ►Serial Port 2 Configuration	→←：Select Screen ↑↓：Select Item Enter：Select +/-：Change Opt F1：General Help F2：Previous Values F3：Optimized Defaults F4：Save ESC：Exit
Version 2.15.1227. Copyright (C) 2012,American Megatrends, Inc.	

- **Serial Port 1～ 6 Configuration**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
Serial Port 1～6 Configuration	→←：Select Screen
	↑↓：Select Item
Serial Port [Enabled]	Enter：Select
Device Settings IO=3F8h; IRQ=4;	+/-：Change Opt
	F1：General Help
	F2：Previous Values
	F3：Optimized Defaults
	F4：Save
	ESC：Exit
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*** Serial Port**

This option is used to enabled or disable the current serial port.

*** Device Settings**

This option is used to display the current resource configuration of the serial port.

➢ **H/W Monitor**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
PC Health Status	→←：Select Screen
	↑↓：Select Item
System Temperature : +29 C	Enter：Select
CPU Temperature : +30 C	+/-：Change Opt
	F1：General Help
SYSFAN1 : 3068 RPM	F2：Previous Values
SYSFAN2 : N/A	F3：Optimized Defaults
SYSFAN3 : N/A	F4：Save
CPUFAN1 : 2086 RPM	ESC：Exit
Vcore : +0.992 V	
V3.3 : +3.296 V	
V5.0 : +5.007 V	
V12.0 : +12.091 V	
VBAT : +3.232 V	
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Display the currently detected hardware monitoring information, such as voltage, temperature, fan speed, etc.

- **System Temperature**

Current system temperature, usually monitored by the thermal resistor on motherboard.

- **CPU Temperature**

Current CPU temperature, monitored by the temperature sensor on the motherboard.

- **SYSFAN1/ SYSFAN2/ SYSFAN3/CPUFAN1**

Monitoring of current system fan and CPU fan speed.

- **Vcore**

CPU core voltage.

- **V3.3/ V5.0/V12.0**

Switching power output voltage.

- **VBAT**

CMOS battery voltage.

➢ **Serial Port Console Redirection**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
COM1 Console Redirection [Enabled] ► Console Redirection Settings	→←：Select Screen ↑↓：Select Item Enter：Select +/-：Change Opt F1：General Help F2：Previous Values F3：Optimized Defaults F4：Save ESC：Exit
Version 2.15.1227. Copyright (C) 2012,American Megatrends, Inc.	

- Console Redirection

Enable or disable serial port redirection function.

- **Console Redirection Settings**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
Com 1 Console Redirection Settings Terminal Type [ANSI] Bits per second [115200] Data Bits [8] Parity [None] Stop Bits [1] Flow Control [None] VT-UTF8 Combo Key Support [Enabled] Recorder Mode [Disabled] Resolution 100x31 [Enabled] Legacy OS Redirection Resolution [80x24] Putty KeyPad [VT100]	→←：Select Screen ↑↓：Select Item Enter：Select +/-：Change Opt F1：General Help F2：Previous Values F3：Optimized Defaults F4：Save ESC：Exit
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*** Terminal Type**

To set terminal type.

*** Bits per second**

To set baut rate.

*** Data Bits**

To set data bits.

*** Parity**

To set parity.

*** Stop Bits**

To set stop bits.

*** Flow Control**

To select flow control.

The description of serial port redirection function keys is as follows:

Key or Function	Sequence
Home	<ESC>h
End	<ESC>k
Insert	<ESC>+
Delete	<ESC>-
Page Up	<ESC>?
Page Down	<ESC>/
F1	<ESC>1
F2	<ESC>2
F3	<ESC>3
F4	<ESC>4
F5	<ESC>5
F6	<ESC>6
F7	<ESC>7
F8	<ESC>8
F9	<ESC>9
F10	<ESC>0
F11	<ESC>!
F12	<ESC>@

Note: COM1 only supports serial port redirection in literal interface, and does not support that in graphic indterface.

- **CPU PPM Configuration**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
CPU PPM Configuration EIST [Enabled]	→←：Select Screen ↑↓：Select Item Enter：Select +/-：Change Opt F1：General Help F2：Previous Values F3：Optimized Defaults F4：Save ESC：Exit
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Display the relevant information of CPU. Note: the information to be displayed are related to the CPU installed in the platform, and different information will be displayed for different series of CPUs.

- **EIST**

  Enable SpeedStep function of CPU.

➢ **HDD Latency Time**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.		
Advanced		
HDD Latency Time	[Disabled]	→←：Select Screen ↑↓：Select Item Enter：Select +/-：Change Opt F1：General Help F2：Previous Values F3：Optimized Defaults F4：Save ESC：Exit
Version 2.15.1227. Copyright (C) 2012,American Megatrends, Inc.		

This option is to set HDD latency time, and the default value is Disabled. For a large capacity HDD which may not be detected during POST and can be detected after reboot, users can set a proper time period (e.g. 3 seconds).

◆ **Chipset**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Main Advanced **Chipset** Boot Security Save & Exit	
WARNING: Setting wrong values in below sections may cause system to malfunction! ► PCH-IO Configuration ► System Agent (SA) Configuration	→←：Select Screen ↑↓：Select Item Enter：Select +/-：Change Opt F1：General Help F2：Previous Values F3：Optimized Defaults F4：Save ESC：Exit
Version 2.15.1227. Copyright (C) 2012,American Megatrends, Inc.	

➢ **PCH-IO Configuration**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Chipset	
► USB Configuration Restore AC Power Loss [Power On]	→←：Select Screen ↑↓：Select Item Enter：Select +/-：Change Opt F1：General Help F2：Previous Values F3：Optimized Defaults F4：Save ESC：Exit
Version 2.15.1227. Copyright (C) 2012,American Megatrends, Inc.	

- **Restore AC Power Loss**

  This option can set the system status when the computer is powered on after powered off under AC. “Power Off” is to make the system at power off status; “Power On” is to power on the system automatically; “Last State” is to recover the status before powering off.

- **USB Configuration**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Chipset	
USB Configuration EHCI1 [Enabled] USB Ports Per-Port Disable Control [Disabled]	→←：Select Screen ↑↓：Select Item Enter：Select +/-：Change Opt F1：General Help F2：Previous Values F3：Optimized Defaults F4：Save ESC：Exit
Version 2.15.1227. Copyright (C) 2012,American Megatrends, Inc.	

*** EHCI 1**

Switch for EHCI controller 1.

***** USB Ports Per-Port Disable Control

General control switch for USB Port.

- **System Agent (SA) Configuration**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Chipset	
VT-d [Enabled] PEG0 – Gen X [Auto] De-emphasis Control [-3.5 dB] ▶ Graphics Configuration ▶ Memory Configuration	→←：Select Screen ↑↓：Select Item Enter：Select +/-：Change Opt F1：General Help F2：Previous Values F3：Optimized Defaults F4：Save ESC：Exit
Version 2.15.1227. Copyright (C) 2012,American Megatrends, Inc.	

- **VT-d**

  Switch for the Intel virtualization technology.

- **PEG0 – Gen X**

  Speed control switch for PCIE1 device.

- **De-emphasis Control**

  De-emphasis control switch for PCIE1 device.

➢ **Graphics Configuration**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.		
Advanced		
Graphics Configuration		
Primary Display	[Auto]	→←：Select Screen
Primary PEG	[Auto]	↑↓：Select Item
DVMT Pre-Allocated	[64M]	Enter：Select
DVMT Total Gfx Mem	[256M]	+/-：Change Opt
		F1：General Help
		F2：Previous Values
		F3：Optimized Defaults
		F4：Save
		ESC：Exit
Version 2.15.1227. Copyright (C) 2012,American Megatrends, Inc.		

- **Primary Display**

  This option is used to specify the boot display device with priority.

- **Primary** PEG

  This option is used to specify the boot display device under PEG.

- **DVMT Pre-Allocated**

  Choose DVMT pre-allocated memory size.

- **DVMT Total Gfx Mem**

  Choose DVMT total Gfx memory size.

➢ **Memory Configuration**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
Memory Information	→←：Select Screen
Memory Frequency 1067 Mhz	↑↓：Select Item
Total Memory 2048 MB (DDR3)	Enter：Select
DIMM1 Not Present	+/-：Change Opt
DIMM2 2048 MB (DDR3)	F1：General Help
CAS Latency(tCL) 7	F2：Previous Values
Minimum delay time	F3：Optimized Defaults
CAS to RAS (tRCDmin) 7	F4：Save
Row Precharge (tRPmin) 7	ESC：Exit
Active to Rrecharge (tRASmin) 20	
XMP Profile 1 Not Supported	
XMP Profile 2 Not Supported	
Memory Remap [Enabled]	
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- **Memory Remap**

  This option is used on the platform with North Bridge supporting above 4G (for example: 64GB), which will map the addresses occupied by legacy device below 4G, such as BIOS, APIC, PCIE, PCI MEMORY, etc. to that above 4G. Therefore, when several physical memory modules are installed, the OS can use more physical memories.

◆ **Boot**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Main Advanced Chipset **Boot** Security Save & Exit	
Boot Configuration	→←：Select Screen
Quiet Boot [Disabled]	↑↓：Select Item
Fast Boot [Disabled]	Enter：Select
Boot Option Priorities	+/-：Change Opt
Boot Option #1 [Netac]	F1：General Help
Boot Option #2 [UEFI:Netac]	F2：Previous Values
	F3：Optimized Defaults
► CSM parameters	F4：Save
	ESC：Exit
Version 2.15.1227. Copyright (C) 2012,American Megatrends, Inc.	

➢ **Quiet Boot**

Boot mode selection switch, which is used to enable or disable Quiet Boot function.

➢ **Boot Option Priorities**

This option is used to configure the system booting priorities. #1 represents the highest priorities while #n represents the lowest priorities.

➢ **CSM parameters**

This option is used to configure the priorities of the legacy devices in BBS. #1 represents the highest priorities while #n represents the lowest priorities.

Note: If the GPT system is to be installed and used, you need to set the "Boot option filter" under the submenu to "UEFI only".

◆ **Security**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Main Advanced Chipset Boot **Security** Save & Exit	
Password Description If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup. If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights. The psssword length must be in the following range: Minimum length 3 Maximum length 20 Administrator Password	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.15.1227. Copyright (C) 2012,American Megatrends, Inc.	

➢ **Administrator Password**

This option is used to set administrator password.

◆ **Save & Exit**

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.	
Main Advanced Chipset Boot Security **Save & Exit**	
Save Changes and Reset Discard Changes and Reset Boot Override Netac UEFI:Netac	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit
Version 2.15.1227. Copyright (C) 2012,American Megatrends, Inc.	

- **Save Changes and Reset**

  The option is used to save changes and reset.

- **Discard Changes and Reset**

  The option is used to discard changes and reset.

- **Boot Override**

  This option is used to choose boot device.

System Resource Managed by UEFI under X86 Platform

We define three kinds of system resources here: I/O port address, IRQ interrupt number and DMA number.

◆ **DMA**

Level	Function
DMA0	Unassigned
DMA1	Unassigned
DMA2	Unassigned
DMA3	Unassigned
DMA4	Used for DMAC cascade
DMA5	Unassigned
DMA6	Unassigned
DMA7	Unassigned

◆ **APIC**

Advanced programmable interrupt controller. Most motherboards above P4 level support APIC and provide more than 16 interrupt sources, like IRQ16 - IRQ23; while some others can have up to 28 interrupt sources, such as motherboard supporting PCI-X. However, relevant OS are required to enable that function.

◆ **IO Port Address**

Only 16 IO address lines are designed for X86, from 0 ~ 0FFFFh; there is 64K for the system I/O address space. In traditional ISA connector, only the foregoing 1024 (0000 ~ 03FFh) are adopted while the ports above 0400h are adopted by PCI and EISA connectors. Each peripheral will occupy portion of the space. The table below shows parts of the I/O connectors used in X86 platform.

Address	Device Description
000h - 00Fh	DMA Controller #1
010h - 01Fh	Motherboard Resource
020h - 021h	Programmable Interrupt Controller #1
022h - 03Fh	Motherboard Resource
040h - 043h	System Timer
044h - 05Fh	Motherboard Resource
060h	Standard 101/102 Key or Microsoft Natural PS/2 Keyboard
061h	System speaker
062h – 063h	Motherboard Resource
064h	Standard 101/102 Key or Microsoft Natural PS/2 Keyboard
065h - 06Fh	Motherboard Resource
070h - 071h	Real Time Clock, NMI
072h – 07Fh	Motherboard Resource
080h	Motherboard Resource
081h - 083h	DMA Controller #2
084h - 086h	Motherboard Resource
087h	DMA Controller #3
088h	Motherboard Resource
089h - 08Bh	DMA Controller #4

08Ch - 08Eh	Motherboard Resource
08Fh	DMA Controller #5
090h - 09Fh	Motherboard Resource
0A0h - 0A1h	Programmable Interrupt Controller #2
0A2h – 0BFh	Motherboard Resource
0C0h - 0DFh	DMA Controller #6
Address	**Device Description**
0E0h - 0EFh	Motherboard Resource
0F0h - 0FFh	Numeric data processor
170h - 177h	Slave IDE
1F0h - 1F7h	Master IDE
274h – 277h	ISAPNP Read Data Port
279h	ISAPNP Read Data Port
2F8h - 2FFh	COM2
3B0h – 3BBh	Intel(R) HD Graphics Family
3C0h – 3DFh	Intel(R) HD Graphics Family
3F6h	Master IDE(dual FIFO)
3F8h - 3FFh	COM1
400h - 453h	System Resource
454h –457h	Motherboard Resource
458h –47Fh	System Resource
4D0h – 4D1h	Motherboard Resource
500h - 57Fh	System Resource
A30h – A3Fh	Motherboard Resource
A79h	ISAPNP Read Data Port
0D00h-FFFFh	PCI bus

◆ **IRQ Assignment Table**

There are 15 interrupt sources of the system. Some are occupied by the system devices. Only the ones that are not occupied can be assigned to other devices. ISA device requests exclusive use of its interrupt. Only the plug and play ISA devices can be assigned by the UEFI or the OS. And several PCI devices share one interrupt, which is assigned by UEFI or OS. Interrupt assignment of some devices of X86 platform is shown in the table below, but it does not show the interrupt source occupied by the PCI devices.

Level	Function
IRQ0	System Timer
IRQ1	PS2 Keyboard
IRQ2	Reserved
IRQ3	COM#2
IRQ4	COM#1
IRQ5	Reserved
IRQ6	Reserved
IRQ7	Reserved
IRQ8	System CMOS/Real Time Clock
IRQ9	ACPI-Compliant System
IRQ10	PCI Device (SMBUS)
IRQ11	ME
IRQ12	Mouse
IRQ13	Numeric data processor
IRQ14	Master IDE Channel
IRQ15	Slave IDE Channel

Chapter 4 Installing the Drivers

Regarding the driver program of this product, please refer to the enclosed CD.

Appendix

BPI Overview

EVOC BPI (BIOS Programming Interface) is a cross-platform, easy-maintenance software interface specification, which can access hardware under the protection mode of the operating system. The function of the product is to provide a unified standard interface for the application software or driver; therefore, when the hardware of the motherboard is upgrading, there is no need to modify the application software or driver and the former software can operate on the new platform normally. It has greatly improved the product development speed and reduced the maintenance cost. Currently, BPI supports the configuration of WDT and GPIO as well as H/W monitor function. As for the test program and function library, please refer to the relevant documents in the enclosed CD.

Features of the BPI include:

1、 Platform Irrelevant

The software developed by BPI function library can operate on a new platform, supporting BPI function, normally without making any modification.

2、 Security and High Reliability

The BPI function library accessing the hardware is programmed by the motherboard developer and is strictly tested; therefore, it can avoid system malfunction due to improper operation of the system hardware.

3、 Flexible Configuration

Take GPIO configuration as an example, users may conveniently configure an arbitrary GPIO function by BPI function library or test program.

4、 Easy Maintenance

Traditional WDT and GPIO programming are closely related to the hardware with complicated test and debug process and software of different platforms; however, the software developed by BPI only requires for a set of the maintenance software.

5、 Low Cost

Developing the applications by BPI will not increase additional hardware and

software cost, but it will reduce the development difficulty, development cycle and time-to-market for the system integrator.

Troubleshooting and Solutions

NO.	Phenomenon	Troubleshooting and Solution
1	BIOS setting cannot be saved	Analysis: it could be the problem of the CMOS battery.
		Solution: measure the CMOS battery with a multi-meter; if the voltage is insufficient, replace the battery; re-set the BIOS and save again.
2	The computer can only be powered-on occasionally	Analysis: it may be caused by poor connection. Remove the power plug from power socket on motherboard, you may find that certain pin of the motherboard power has been collapsed to one side after some forceful insertion.
		Solution: power off the computer and remove the power plug; erect the bended power pin with tweezers and re-insert in the power socket. Reboot the computer and test for several times until the problem no longer exits.
3	When connecting with a USB flash drive, the system prompts that a high-speed device has been connected with a low-speed connector.	Analysis: A USB flash drive is a high-speed USB2.0; when connecting with the computer, it prompts that a high-speed device has been connected with a low-speed connector, which indicates that the connector on motherboard is regarded as a USB1.1 port.
		Solution: enable the USB high-speed transmission mode on the motherboard. Different motherboards may have different settings. Change the FULLSPEED option to HISPEED in USB device option.
4	The screen has no display after replacing with a new memory and cannot enter system; even when the former memory is re-installed, the system cannot be booted as	Analysis: it could result from improper operation when inserting or removing the memory and cause abnormal operation of the components on the motherboard. Focus on the circuit related to the memory on the motherboard.
		Solution: check the hardware such as memory, video card first; if it shows that the hardware are all OK, then check the circuit around the memory slot on motherboard carefully; you may find that the two pins connected with the gold finger in the first memory slot are shorted while the second memory slot is normal, then you may know that there is short circuit in the first memory slot. Remove

	well.	the two pins to their original location with tweezers carefully, insert the memory, reboot the system and the system will be booted smoothly.
5	The system cannot be booted after replacing a CD-ROM.	Analysis: the data cable of the hard disk may get knocked when installing the CD-ROM, which leads to poor connection of the hard disk data cable, or the master and slave jumpers on hard disk and CD-ROM are wrongly set.
		Solution: check the data cable of the hard disk and the IDE connectors on hard disk and motherboard first; if there are no problems, then check the master and slave jumper setting. You may find that the hard disk and CD-ROM are connected with different data cables while their jumpers are all set to master; thus, the hard disk cannot be booted. Set the CD-ROM jumper to slave and then re-install it.
6	No PCI card can be detected after entering the system.	Analysis: make sure the PCI card functions normally; re-insert the PCI card or insert it into another PCI slot to see whether it is normal; find out the power type in use (AT or ATX); find out users' requirement for the PCI card voltage.
		Solution: if the PCI card functions abnormally, replace it with a new one; if it functions normally when re-inserted or inserted in another PCI slot, then there is something wrong between the PCI card and the slot. If AT power is adopted and the PCI card requires 3.3V voltage, then the AT power shall be replaced with ATX power because AT power cannot provide 3.3V voltage. (Suggestion: when purchasing power supplies, please check whether the PCI card in use requires 3.3V voltage or not).
7	No peripheral devices can be detected.	Analysis: devices are not connected; no drivers are loaded; devices are broken.
		Solution: check whether the cable between the device and the motherboard is normal; if it is normal, replace it with a new cable to make sure the connection is OK. Re-install the device driver and check whether it can be recognized; check whether the device is normal; if the device is normal, then check whether the device is compatible with the motherboard.